

IN THE CLAIMS:

1. (Cancelled)
2. (Cancelled)
3. (Cancelled)
4. (Cancelled)
5. (Cancelled)
6. (Cancelled)
7. (Cancelled)

8. (Currently Amended) A microscope comprising:
two objectives between which a light-transmitting specimen is arranged;
said objectives having substantially identical optical characteristics;
at least one of said two objectives being followed by a mirror for reflecting
light transmitted through the specimen back into itself exactly wherein the mirror is placed in
a back focal plane (pupil plane) of said at least one objective;
a detector for receiving fluorescent radiation from the specimen;
wherein a transmitted excitation light and said fluorescent radiation are
reflected by said mirror, but only said reflected fluorescent radiation along with said
fluorescent radiation coming directly from the specimen are reimaged on the detector without
the reflected excitation light,

The microscope according to claim 1, constructed as a laser scanning
microscope, wherein one of the objectives serves as a microscope objective and the second
objective is part of a reflecting device having a phase-conjugating mirror or an adaptive
mirror by which the wavefront of the reflected light is made to coincide with the wavefront of
the transmitted light.

9. (Previously Presented) The microscope according to claim 8, wherein the adaptive mirror (23) is provided with a deformable mirror surface arranged on a diaphragm, and a plurality of individual electrodes are located opposite the diaphragm on its side remote of the mirror surface, and electric voltage is applied to the diaphragm on the one hand and to the electrodes on the other hand, and the deformation of the diaphragm is brought about by changing the voltages and electrostatic forces acting between the diaphragm and electrodes.

10. (Previously Presented) The microscope according to claim 9, wherein the electrodes communicate with said detector for a beam component which is coupled out of an observation beam path, with fluorescent radiation proceeding from the specimen.

11. (Cancelled)

12. (Cancelled)

13. (Cancelled)

14. (Cancelled)

15. (Cancelled)

16. (Cancelled)

17. (Previously Presented) The microscope according to claim 8, wherein the adaptive mirror is provided with a deformable mirror surface arranged on a diaphragm, the diaphragm is connected, on its side remote of the mirror surface, to a plurality of individual piezoelectric drives and the deformation of the diaphragm is brought about by controlling the piezoelectric drives.

18. (Previously Presented) The microscope according to claim 17, wherein the piezoelectric drives communicate with a detection device for a beam component which is coupled out of the observation beam path, with fluorescent radiation proceeding from the specimen.

19. (Cancelled)

20. (Cancelled)